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The importance of central-visual perception disorders for dyslexia and dyscalculia

Kucian, Karin

Abstract: Visual perception disorders can lead to different learning disorders in children. These are often difficulties in reading and writing, as well as in calculation and number processing. Dyslexia, the specific reading and spelling disorder, is also associated with various deficits of visual perception which, for example, make it difficult to distinguish between individual letters or impair the text-dependent eye movements. From a neural point of view, the visual word form area (VWFA) in the fusiform gyrus, which is responsible for the visual processing of orthographic information must be highlighted, since the VWFA is often disturbed in dyslexics. Dyscalculia, the specific calculation disorder, is often associated with difficulties in visual-spatial processing. This is not surprising since our mental representation of numbers and magnitudes is spatially organized. This means we have a kind of mental number line on which we store numbers according to their magnitude. In the case of dyscalculia, the construction and the automated access to this mental number line are often disturbed. This mental number line is located in the intraparietal sulcus (IPS) of the brain, the region which shows increased abnormalities in dyscalculia, such as volume differences of gray matter, reduced activation or reduced connection to other cortical areas. Although central-visual perception disorders can clearly lead to learning disabilities of reading and writing, as well as calculation, dyslexia or dyscalculia is defined only when organic causes can be ruled out, which is why a differentiation between classical dyslexia or dyscalculia and problems in reading/writing and calculation due to visual deficits is necessary.

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Other titles: Die Bedeutung der ZVWS für die Dyslexie und Dyskalkulie

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The Importance of Central-Visual Perception Disorders for Dyslexia and Dyscalculia

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Weitere Informationen

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Visual perception disorders can lead to different learning disorders in children. These are often difficulties in reading and writing, as well as in calculation and number processing.

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